A comparison of Agabus affinis, Payk., with unguicularis, Thoms.

(with two plates).

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In the *Ent. Mo. Mag.*, v., 17, 1868-9, Dr. David Sharp published a note upon *Agabus affinis*, Payk., which, up to that time, had been confused in British collections with *Agabus unguicularis*, Thoms.

He gave the following characters, partly from Paykull and Thomson and partly from his own observation, for distinguishing the two species :—

1. The more parallel form of *affinis*.
2. The large punctures on the elytra being more evident towards the base in *affinis* than in *unguicularis*.
3. The difference in shape of the laciniæ of the metasternum in the two species.
4. The reflexed margin of the base of the elytra being quite black in *affinis* and obscure red in *unguicularis*.
5. The darker and blacker general colour of *affinis* as compared with the more brassy black of *unguicularis*.

In 1904, Mr. W. E. Sharp contributed a note to the *Ent. Rec.*, xvi., pp. 90-92, in which he sought to make the distinctions between these two species clearer. This note was followed by one from Mr. James Edwards, *Ibid*, p. 187, who suggested that Mr. Sharp had inadvertently transposed the names, as the descriptions did not agree with his knowledge of the species, and he also pointed out that Mr. Sharp had undoubtedly made a mistake in referring to Mr. Thouless' comparison of the stridulating files of the males of the two species. This note drew a non-committal reply from Mr. Sharp and there the matter dropped, leaving the separation of the two species more difficult than it was before.

I have had the opportunity of collecting both species in Britain, in fair numbers, and, in view of the contradictory statements in the notes already referred to, I have thought it worth while to examine the two species carefully, with a view to making a clear statement as to their character.

Agabus unguicularis, Thoms., is a species which occurs not uncommonly in East Norfolk, and I have also recently taken a number of specimens at Chaloner's Whin, York, which agree in their characters with my Norfolk specimens.

Agabus affinis, Payk., is, I venture to think, a not uncommon species in the south of Scotland—I have done very little collecting in the north—and I believe Professor Hudson Beare is of the same opinion. I have taken it fairly commonly in Dumfriesshire, Kirkcudbrightshire, and Dumbartonshire, the only three counties in which I have done any extensive collecting, and I have examined more than 40 specimens of each of these species before venturing on this note.

Mr. W. E. Sharp took as his type of *affinis* certain specimens sent to him from Sweden. They were females, and he found, on comparing them with Dumfries specimens of this species, that "the shape of the latter is distinctly more elongated and parallel-sided, legs and antennæ clear red instead of somewhat infuscate, and occipital spots much more distinct and of a brighter colour."

Now Mr. Sharp admits that he finds the females of the two species "exceedingly difficult to separate," and he omits two points of

importance in the above-quoted remarks. He does not say who determined the specific identity of his Swedish specimens, and he does not say how many he had. His remarks apply in all but one character to a comparison of *unguicularis* with *affinis*. The latter is distinctly more parallel-sided, and, in the majority of my specimens, the occipital spots are rather more transparent, that is, a little brighter, than in my specimens of *unguicularis*. I have no *affinis* with clear red antennæ or legs. In all cases the joints of the antennæ, except three or four at the base, are somewhat darkened at their distal end, but the antennæ of *unguicularis* are, in almost all cases, more infuscate.

The legs of all my specimens of *affinis* are dark, and, in most cases, more pitchy than those of my specimens of *unguicularis*.

Mr. Sharp speaks of the "much shorter anterior tarsal claws" of the males of *affinis*. I have taken off and measured, under the microscope, the anterior tarsal claws of several males of *affinis* and *unguicularis*, and I can detect no appreciable difference. Mr. Sharp's impression arises, I believe, from the fact that the tooth on the anterior tarsal claw is somewhat heavier built in *unguicularis* than in *affinis*, which makes the claw of the former look somewhat larger. He speaks of the "dens validus et acutus, mentioned by Thompson" of the anterior tarsal claws of males of *affinis*, but says nothing at all as to any tooth on the claws of males of *unguicularis*.

A comparison of the anterior claw on the anterior tarsus of male *affinis* with that of male *unguicularis*, shows at once the differences referred to by Mr. James Edwards. In *affinis*, the tooth is nearly in the form of an equilateral triangle, the apex of which is directed neither forwards nor backwards; in *unguicularis* the tooth has, as a rule, a slightly longer base, and its apex is directed forward towards the apex of the claw, and it has a heavier appearance.

With regard to the stridulating files on the ventral side of the 3rd abdominal segment of the males of these two species, Mr. Edwards has already pointed out that Mr. Sharp has transposed the descriptions. I have made drawings, by means of camera lucida, of a file of each of the species, and the great difference between the two is at once obvious. The files of *affinis* occupy about $\frac{2}{3}$ of the space of those of *unguicularis*, although composed of about the same number of teeth—the number being somewhat variable in both species—and the ridges are very much stronger in *unguicularis* than in *affinis*.

As to the colour of the reflexed margin of the base of the elytra, it is distinctly black in all my specimens of *affinis*, and dusky-red in all my specimens of *unguicularis*. I can quite believe that, in immature specimens of *affinis*, this colour test might fail, but the elytra of mature specimens of this species are, when examined by transmitted light, much denser than those of *unguicularis*, and I should certainly consider this character reliable between mature individuals.

It is not easy to detect the difference between the metasterna in the two species *in situ*, but, if these are separated out by maceration, mounted flat, and compared under the microscope, the difference is at once obvious (see figure). If the elytra also of the two species are removed and placed side by side, with underside uppermost, a slight difference in shape at the apex is easily seen, those of *affinis* being rather more sharply pointed than those of *unguicularis*.

I have only examined a few specimens of each species in more detail, but I believe that there are certain other distinctions discernible under the microscope. For instance, it appears to me that the metanotum of *unguicularis* is more heavily built than that of *affinis*, and also that the five basal joints of the antenna of *affinis*, male or female, measured together, are longer than the same number of joints in an antenna of the same total length in *unguicularis*. These differences, however, if truly specific, are so small as to be of no value for ordinary purposes. For purposes of identification, therefore, I should consider the following characters :—

1. Form more parallel, colour black ; metasternal wings less sharply pointed ; reflexed margin of elytra black, and apex more sharply pointed. In male, anterior claw on anterior tarsi with a triangular tooth, apex of which is directed neither forward nor backward ; stridulatory files shorter, with ridges very fine and close together. Less reliable characters : Legs more infuscate ; antennæ less infuscate ; occipital spots more distinct. =*affinis*, Payk.

2. Form more oval ; colour of a slightly æneous cast ; metasternal wings more sharply pointed ; reflexed margin of elytra obscure-red, and apex less sharply pointed ; in male, anterior claws on anterior tarsi with a tooth, in which apex is directed forward towards apex of claw ; stridulatory files longer, with ridges stronger and farther apart. Less reliable characters : Legs less infuscate ; antennæ more infuscate ; occipital spots less distinct. =*unguicularis*, Thoms.

DESCRIPTION OF PLATE XII.

Fig. 1.—Metasterna of *Agabus affinis*, Payk., and *A. unguicularis*, Thoms. (scale noted).

Fig. 2.—Underside of elytra of *Agabus affinis*, Payk., and *A. unguicularis* Thoms. (scale noted).

DESCRIPTION OF PLATE XIII.

Fig. 1.—Anterior claw on anterior right tarsus of *Agabus affinis*, Payk., ♂, and on anterior left of *A. unguicularis*, Thoms., ♂ (×400 about).

Fig. 2.—Stridulating file of male *Agabus unguicularis*, Thoms., and *A. affinis*, Payk.

Cryptomorpha desjardinsi, Guér.—A probable Cosmopolitan beetle in Britain.

By RICHARD S. BAGNALL, F.E.S.

Last month (September 18th, 1906), whilst searching the cellar at home, I found a beetle, easily recognised as something unusual, and which Mr. Donisthorpe kindly identified as *Cryptomorpha desjardinsi*, Guér., an insect that has been taken in New Zealand, Mauritius, Madeira, etc., and of which Mr. E. A. Waterhouse took a single example, fifteen years ago, out of a bunch of bananas in London.

C. desjardinsi is a striking insect, about 4mm. in length, linear, and, in colour, reddish-testaceous ; antennæ yellow, with joints 7-10 darker, the latter two (9-10) being almost black, whilst the apical joint is clear yellow ; the head (with eyes) is slightly wider than thorax, the eyes being large, black and prominent. Thorax with sides crenulate, longer than broad, widest at apex, and from the middle gradually narrowed to base, where it is much less wide than the base of the elytra. Elytra with strongly punctured striæ and wide interstices ; pubescence short and strong, arranged in parallel rows, longer and more confused at sides ; a dark patch around scutellum, and a dark inverted V-mark on apical third ; apex and middle of elytra testaceous, darkening to edges. Legs testaceous. It is most likely that this beetle falls into the same category as certain cosmopolitan *Cucujidae*, etc., and therefore may, in